National Institute of Environmental Health Sciences

Variation in the incidence of distal radius fractures in the U.S. elderly as related to slippery weather conditions

Author(s): Giladi AM, Shauver MJ, Ho A, Zhong L, Kim HM, Chung KC
Year: 2014
Journal: Plastic and Reconstructive Surgery. 133 (2): 321-332

Abstract:

BACKGROUND: Distal radius fractures are costly and debilitating injuries, especially for the elderly. These fractures often occur from falls and commonly occur outdoors. Inclement weather may increase the risk of fall-related injuries. Small studies have reported an increased risk of distal radius fracture caused by inclement winter weather; larger studies are lacking. METHODS: The authors analyzed a sample of 2007 Medicare claims for distal radius fracture. Weather data were collected for the date and location of each distal radius fracture in the authors' analysis cohort. A novel slipperiness score was used as a measure of the severity of slippery outdoor conditions. Negative binomial regression models evaluated the correlation between slipperiness and distal radius fracture occurrence. RESULTS: Risk of distal radius fracture was higher in winter months (incidence rate ratio, 1.2; p < 0.001). Days with average temperature less than or equal to 32 degrees F (incidence rate ratio, 1.36; p < 0.001), snow/ice on the ground at the start of the day (incidence rate ratio, 1.45; p < 0.001), and freezing rain (incidence rate ratio, 1.24; p Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.025) all had an increased risk of distal radius fracture. The risk of sustaining a distal radius fracture was increased 21 percent on days with a slipperiness score above 4 (incidence rate ratio, 1.21; p Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.007). For each increase in slipperiness score above 4, the incidence rate ratio of distal radius fracture increased as well. CONCLUSIONS: Weather events that create slippery walking conditions, often in the winter, result in an increased risk of distal radius fracture in the elderly. This finding can be used to support resource allocation and awareness and prevention campaigns. CLINICAL QUESTION/LEVEL OF EVIDENCE: Risk, IV.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3905634

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Precipitation, Temperature

Temperature: Extreme Cold, Fluctuations

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☑

resource focuses on specific location

United States

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Injury, Other Health Impact

Other Health Impact: radial fractures; ulna fractures

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Elderly

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified